



US006879114B2

(12) **United States Patent**  
**Jales et al.**

(10) **Patent No.:** **US 6,879,114 B2**  
(45) **Date of Patent:** **Apr. 12, 2005**

(54) **FLUORESCENT LAMP DRIVER CIRCUIT**

**FOREIGN PATENT DOCUMENTS**

(75) Inventors: **Richard James Jales**, East Leigh (GB);  
**Barnaby Norman Wilmott**, Bognor  
Regis (GB)

DE	39 02 984 A1	8/1990
EP	0 587 923 A1	9/1992
GB	2 212 995 A	8/1989
GB	2 271 479 A	4/1994
JP	57-180064	11/1982
JP	60-10554	1/1985
WO	87/05436	9/1987

(73) Assignee: **Raymarine Limited**, Hampshire (GB)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

**OTHER PUBLICATIONS**

(21) Appl. No.: **10/399,947**

E. Wells: "Using the UC3871 and UC3872 Resonant Fluorescent Lamp Drivers in Floating Lamp Applications" Unintrod Design Note DN-75, 1999.

(22) PCT Filed: **Oct. 25, 2001**

M. Martin Alfonso, D. O'Sullivan: "10 watts DC/dc smart converter" Proceedings European Space Power Conference, 1995, pp. 73-79.

(86) PCT No.: **PCT/GB01/04731**

§ 371 (c)(1),  
(2), (4) Date: **Jul. 31, 2003**

Copy of European Search Report.

(87) PCT Pub. No.: **WO02/35891**

PCT Pub. Date: **May 2, 2002**

*Primary Examiner*—Haissa Philogene

(74) *Attorney, Agent, or Firm*—Merchant & Gould P.C.

(65) **Prior Publication Data**

US 2004/0051473 A1 Mar. 18, 2004

(57) **ABSTRACT**

(30) **Foreign Application Priority Data**

Oct. 25, 2000 (GB) ..... 0026111

A fluorescent lamp driver circuit has regulator (SR); primary circuit of transformer (TF); electronic switches (TR2A and TR2B) and current sensing device (Rsense) connected successively in series across power supply (PSF). Controller (CTRL) is connected to create a feed back loop. The secondary circuit of transformer (TF) is coupled to fluorescent lamps (U10 and U11) via ballast capacitors (C1 and C2). Diode (D1) creates unidirectional current flow, so current sensing device (Rsense) indicates only energy input to lamps (U10 and U11). Capacitors (C1 and C2) are placed physically very close to their respective lamps, enabling good matching of currents through lamps (U10 and U11). Pulse width modulator (PM) with predetermined input is connected to regulator (SR) and, via delay circuit (TD) to controller (CTRL), thus permitting a larger dimming ratio, and further control of input power. Overvoltage detector (OVD) is connected to sense the voltage across inductor (L3) and transformer (TF) giving further control in the event of excess voltage.

(51) **Int. Cl.**<sup>7</sup> ..... **H05B 37/02**

(52) **U.S. Cl.** ..... **315/209 R; 315/219; 315/307; 315/276; 315/282; 315/DIG. 7**

(58) **Field of Search** ..... **315/209 R, 219, 315/239, 225, 224, 244, 247, 276, 291, 277, 279, 282, 307, 312, 362, 56, 58, DIG. 4, DIG. 7**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,519,289 A	*	5/1996	Katyl et al.	315/224
5,652,479 A	*	7/1997	LoCascio et al.	315/225
5,754,012 A		5/1998	LoCascio et al.	315/307
5,854,538 A		12/1998	Krummel	315/105
5,892,336 A		4/1999	Lin et al.	315/291

(Continued)

**28 Claims, 3 Drawing Sheets**

